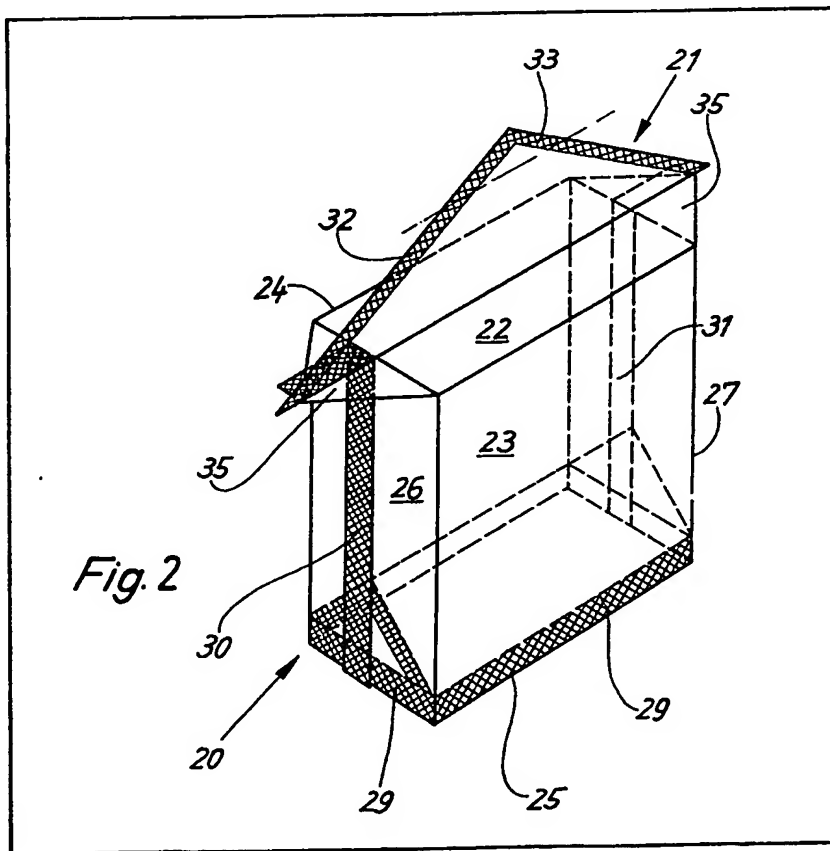


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(54) Pack for liquid or solid pourable materials.

(57) A pack folded from a blank of flexible packaging material, especially weldable composite film, for receiving liquid or solid pourable materials has a pouring spout 21 which is made to taper towards the outflow end and corresponds, in a region in which it merges into a top wall 22, at least to the length of the latter. Packs may be formed in an initially empty, flat form in two rows from a flattened tubular web of packaging material, those of one row being offset relative to those of the other row, in such a way that the pouring spout of a pack of one row fits into a recess bounded by the pouring spouts of two packs of the other row.



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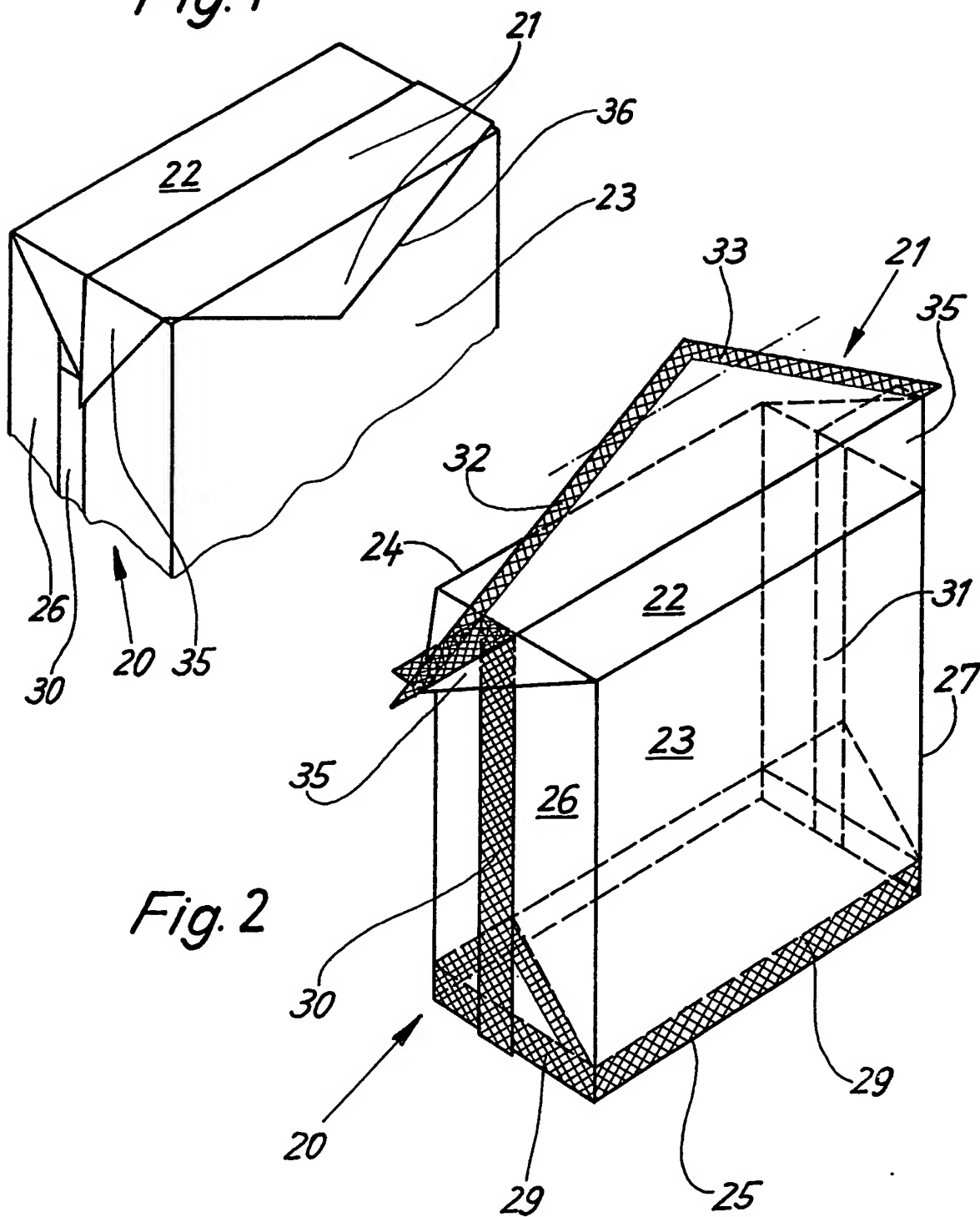
Fig. 1

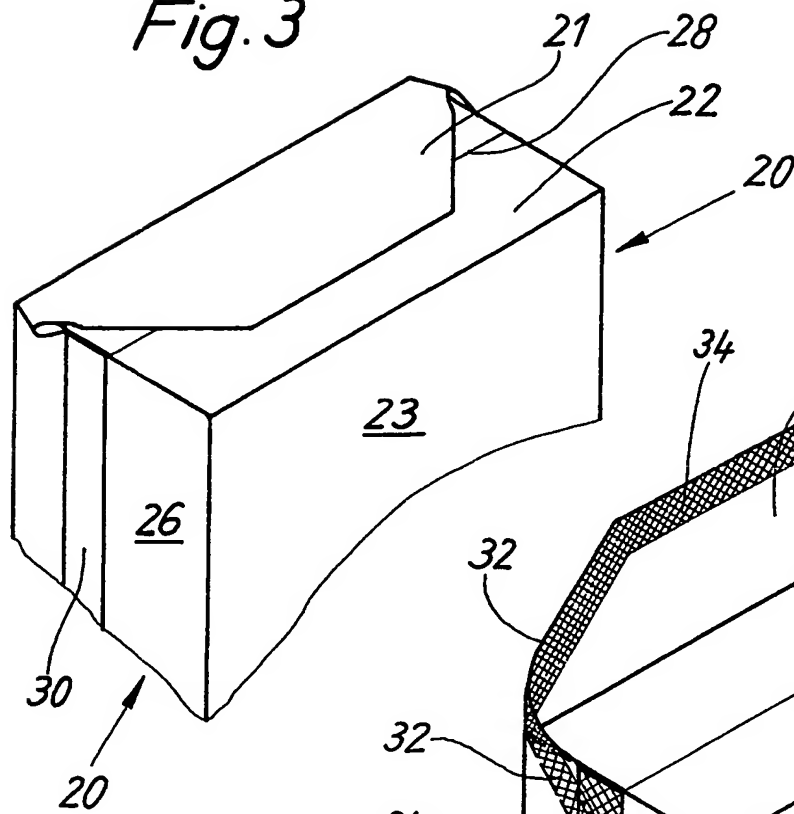
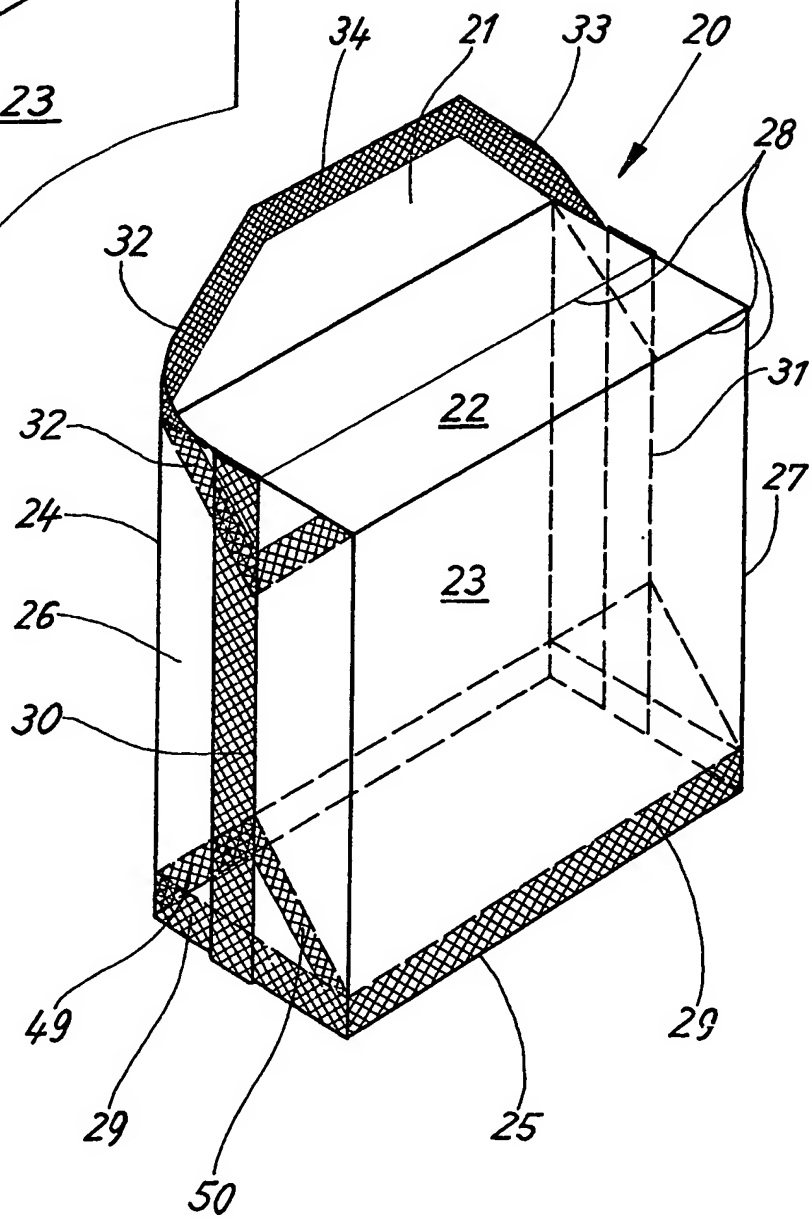
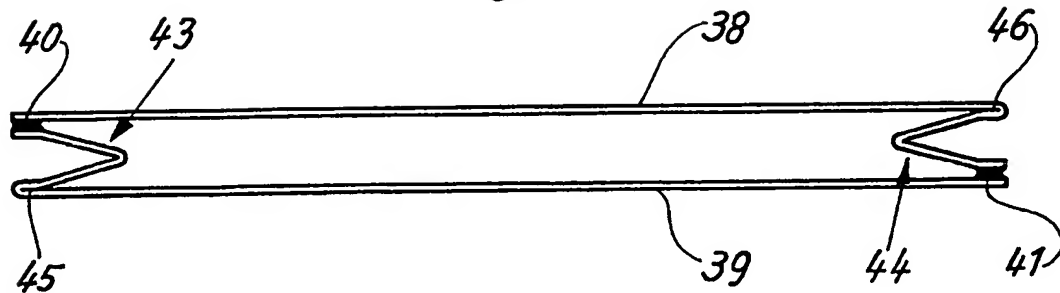
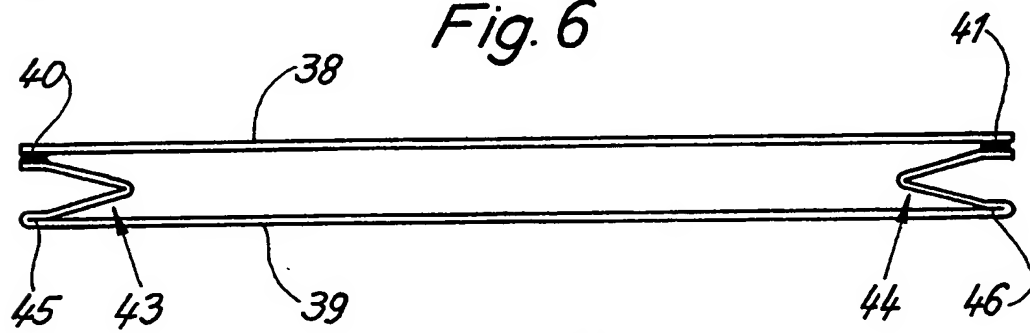
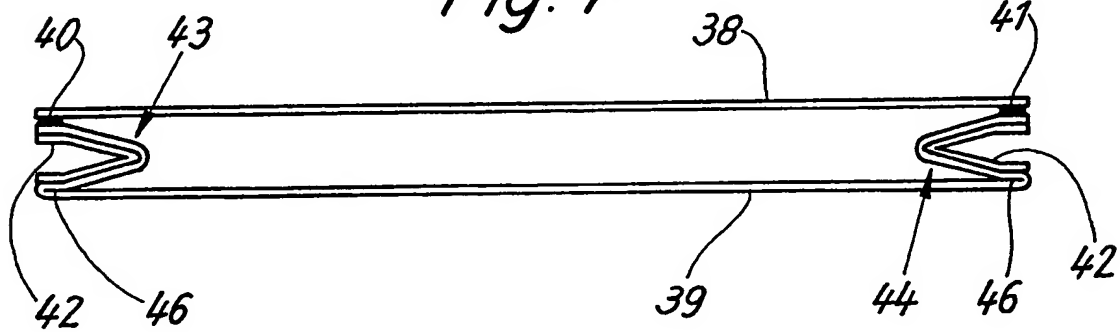
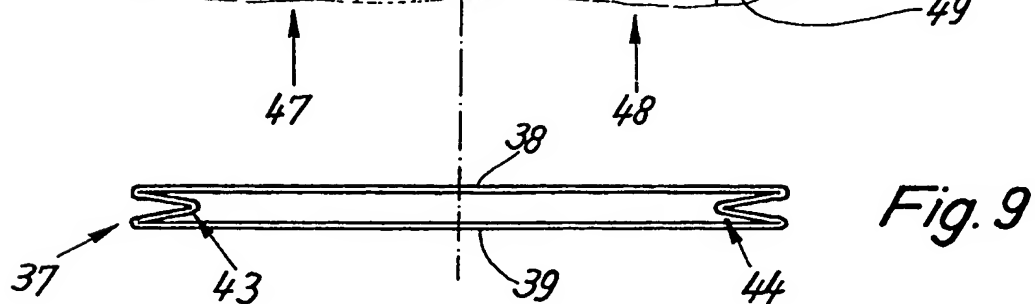
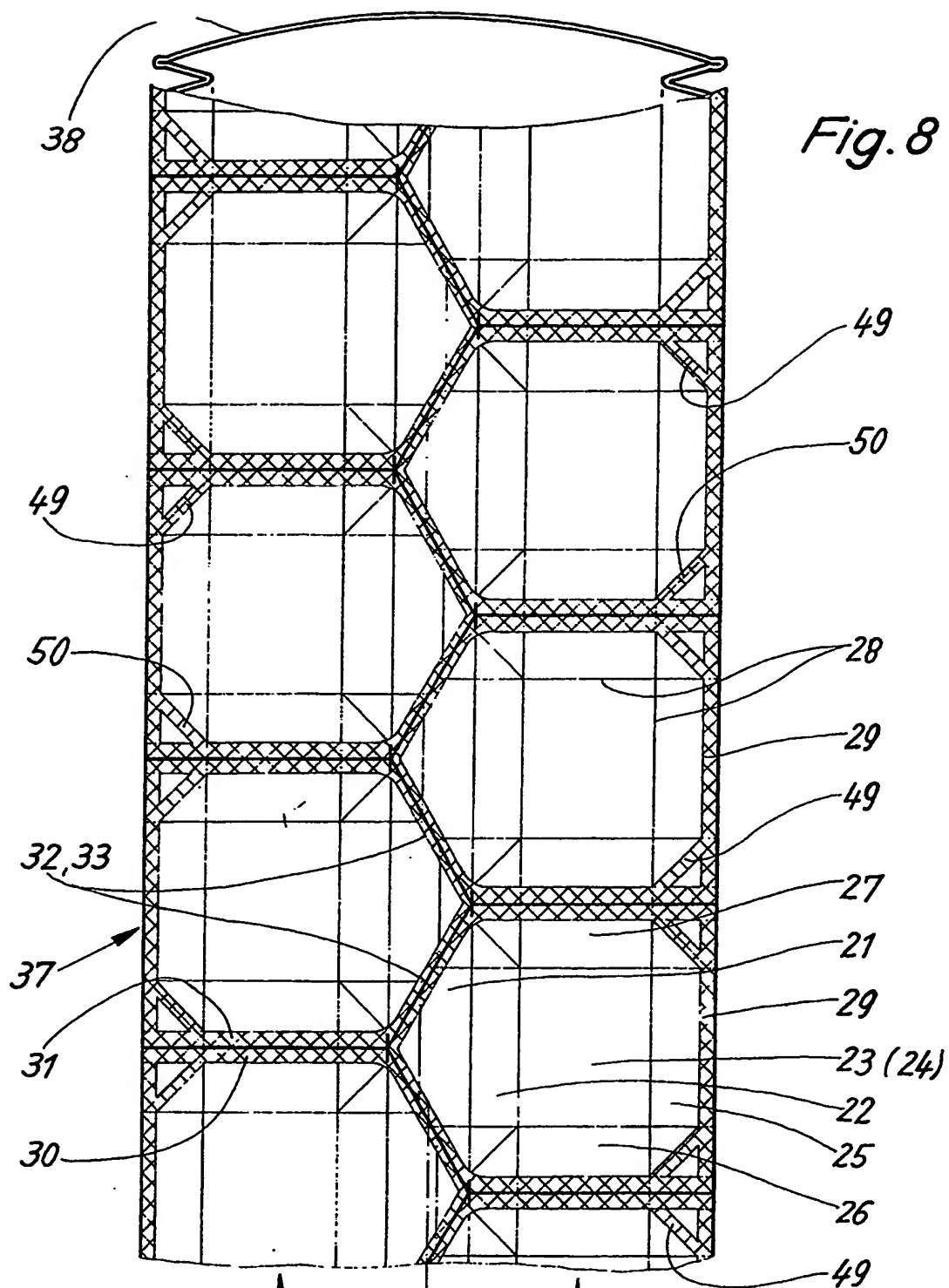
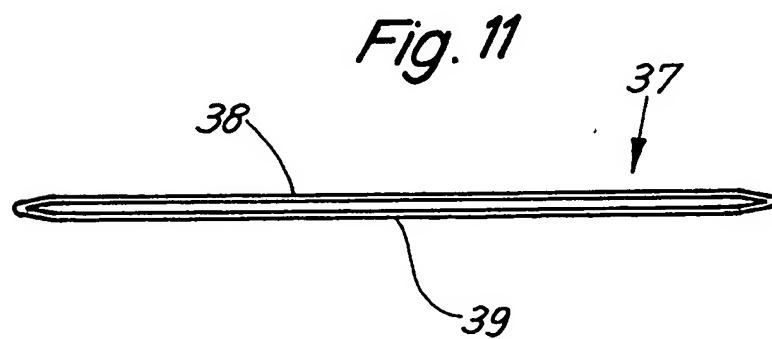
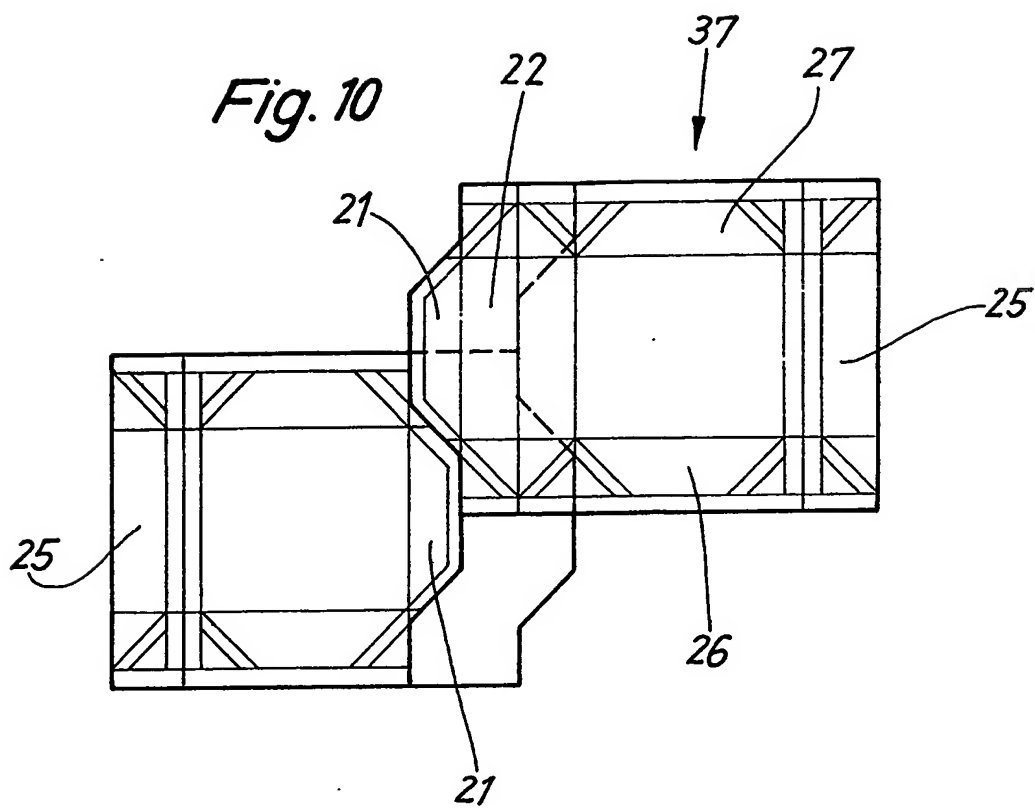
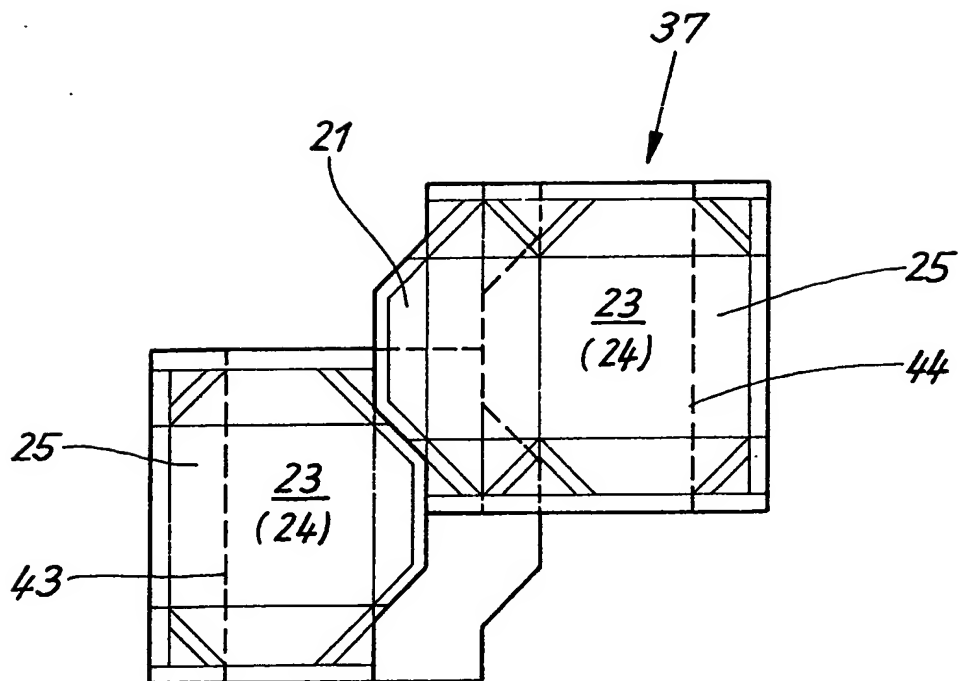
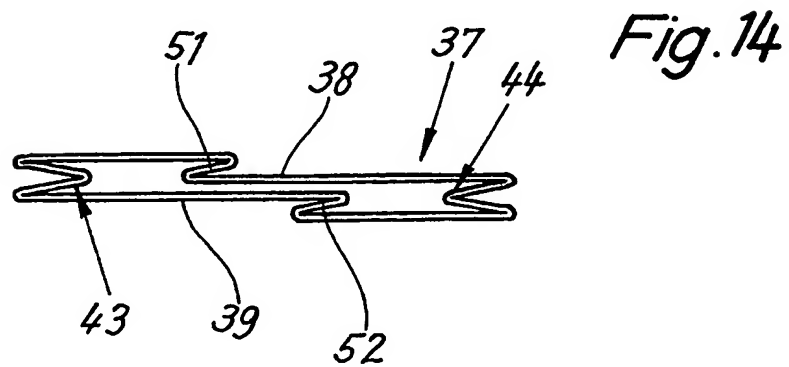
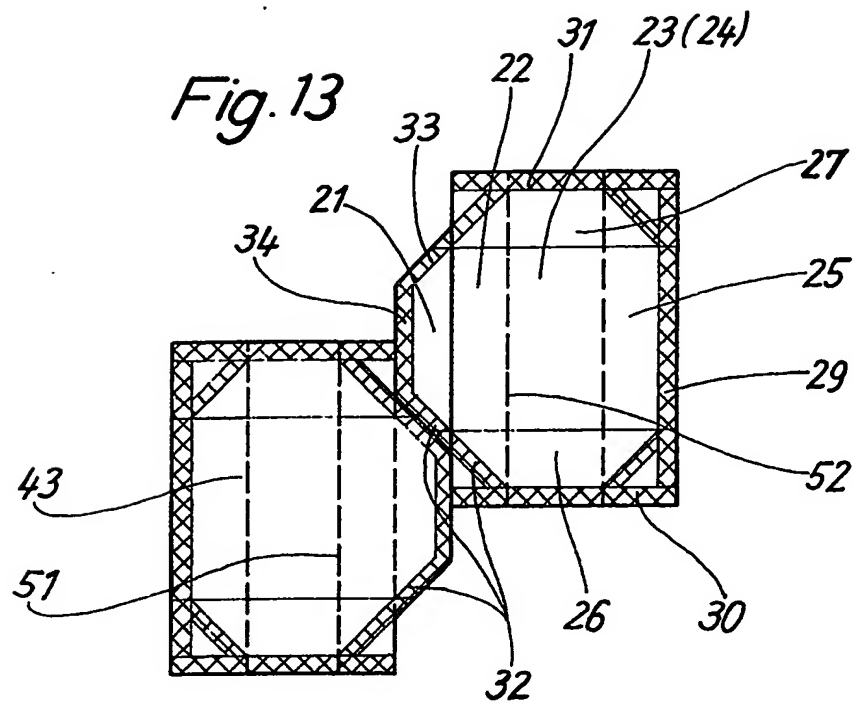
Fig. 3*Fig. 4*

Fig. 5*Fig. 6**Fig. 7*





*Fig. 12*



SPECIFICATION

Pack for liquid or solid pourable materials

- 5 The invention relates to a pack made of flexible packaging material, especially weldable composite film, for receiving liquid or solid pourable materials, it being possible to fold a blank, by means of welding or gluing seams, into an approximately cuboid shape to form bottom and top walls as well as front, rear and side walls and a pouring spout being located on the top wall.

The design of packs for receiving pourable or flowable materials, especially liquids, is a special subject in packaging technology. In the design, it is necessary to ensure, on the one hand, economical mass-production appropriate for machinery and, on the other hand, technically simple filling, satisfactory storability and stackability and, finally, easy handling suitable for the packaged products.

- 15 A prism-shaped standing pouch made of a composite film has become known from German Utility model 80 08,250, and this is equipped on the top side with a filling and emptying spout. Here, the pouring spout is arranged laterally offset relative to the (vertical) longitudinal centre plane of the known standing pouch, and therefore extends only over approximately half the width of the pouch. This arrangement and dimensioning of the pouring spout is consistent with producing the standing pouches from a tubular sheet of packaging material. The tube of material is formed from two film webs which are connected to one another at the free edges by thermal welding. At the lateral longitudinal edges of this tube of material and in the central region, V-folds are formed from the packaging material to represent the bottom and top walls of the finished pouch. The latter is obtained from two V-folds formed in the lower sheet of material. The individual pouches are bounded by transversely directed, V-shaped and longitudinally directed welding seams and are marked within the tube of material. Two pouches lie next to one another in such a way that the pouring spouts arranged offset engage positively in one another.

The standing pouch designed in this way is unfavourable in terms of construction, especially as regards the arrangement and design of the pouring spout. Above all, it is difficult to empty the pouch completely.

- 50 The object on which the invention is based is to design a pack of the type mentioned in the introduction, so that economical and material-saving production, on the one hand, and optimum fitness for the purpose on the other hand, are ensured.

To achieve this object, the pack according to the invention is characterised in that the pouring spout is made to taper towards the outflow end and corresponds, in the region of the transition into the top wall, at least to the width of the latter.

- 60 A pack with the above-mentioned features is distinguished especially by fitness for the pack content, that is to say especially liquids. As a result of the triangular or trapezoidal shape, the pouring spout makes it easier to extract the pack content,

specifically without any residue. The tip closed before use or a free edge of the pouring spout are severed or cut off for this purpose. Because converging welding or gluing seams bounding the pouring spout laterally are continued into the region of the side walls of the pack, a funnel-shaped spout covering the entire width of the pack is obtained.

- 70 The pack designed according to the invention can be produced economically and, above all, free of waste when further features according to the invention are employed. For this purpose, the packs or (double-walled) blanks are severed from a continuous tubular web of packaging material (composite film). Within this tubular web, which consists of two webs of material and is therefore double-layered, the packs or the blanks are arranged in two rows with the pouring spouts facing one another, specifically offset in the longitudinal direction of the tubular web. As a result, the triangular or trapezoidal pouring spouts of the packs can be arranged free of waste, namely positively engaged with one another, in such a way that the pouring spout of a pack of one row projects into the recess between two pouring spouts of packs of the adjacent row.

80 According to the invention, the pouring spouts can be arranged in the centre plane of the pack or, alternatively, offset to the side of this. In the latter design, the rear or front wall merges into the pouring spout, forming a wall of the latter. This design makes it easier to extract the pack content without any residue.

- In contrast to previous techniques, the packs according to the invention can be filled and completed by producing finished packs lying flat on top of one another as units and by feeding them into an appropriately designed magazine of the packaging machine. The finished packs are then filled in the latter, for example by means of an injector needle. At the same time, the packs also acquire their essentially cuboid final shape.

100 Further features of the invention relate to the form of construction of the packs and to methods for producing them.

- Exemplary embodiments of the packs and of tubular webs as an intermediate product for producing packs are explained in more detail below with reference to the drawings in which:

110 *Figure 1* shows, in a perspective representation, the upper part of a first embodiment of a pack before use,

115 *Figure 2* shows, also in a perspective representation, the pack according to *Figure 1* with the pouring spout set upright,

Figure 3 shows a second embodiment of the pack in a representation according to *Figure 1*,

120 *Figure 4* shows the exemplary embodiment according to *Figure 3* in a representation according to *Figure 2*,

Figure 5 to *Figure 7* show, in cross-section, different exemplary embodiments of a tube of material for producing packs according to *Figures 1* to *4*,

125 *Figure 8* shows, in a plan view, a tube of material with packs or blanks to be made from it,

130 *Figure 9* shows a cross-section through the tube of

material according to Figure 8,

Figure 10 shows, in a plan view, a segment of a tube of material for making packs according to Figures 3 and 4,

5 Figure 11 shows a cross-section relating to Figure 10,

Figure 12 shows, in a plan view, the tube segment according to Figure 10 in a changed relative position,

10 Figure 13 shows the tube segment according to Figures 10 and 12 in the relative position corresponding to the finished pack or to the finished blank for this, and

Figure 14 shows a cross-section relating to Figure 13.

15 The packs discussed here are intended, primarily, for receiving liquid materials. A suitable packaging material is a film which is liquid-tight and can preferably be welded thermally. Composite films, that is to say multi-layer films, are preferred for use.

20 The packs consist of a pack body 20, cuboid in the finished state, namely after filling, and of a pouring spout 21 attached to this. The pack body 20 consists of a top wall 21, a front wall 23, a rear wall 24, a bottom wall 25 and side walls 26, 27. The above-mentioned walls 22 to 27 are delimited from one another by folding lines 28 which are made in the packaging material by clamping, heat treatment or the like. A welding or gluing seam, namely the bottom seam 29, extends all round at the bottom edge of the front and rear walls 23, 24 and of the side walls 26 and 27. Vertical side seams 30 and 31 are provided, approximately centrally, in the region of the side walls 26, 27. The pouring spout 21 is bounded by lateral spout seams 32 and 33.

35 In the exemplary embodiment of Figure 1, the pouring spout 21 is made triangular over its full height. Accordingly, the spout seams 32, 33 converge in a straight line. In contrast to this, the pouring spout 21 of the exemplary embodiment according to Figures 3 and 4 is made trapezoidal. A transverse seam 34 at the edge adjoins the converging spout seams 32, 33.

The illustrated exemplary embodiments according to Figures 1 and 2, on the one hand, and Figures 3 and 4, on the other hand, differ from one another in further features of the pouring spouts 21. In the construction according to Figures 1 and 2, the pouring spout 21 extends over the full width of the flat pack or of the pack blank (Figure 8). This means that, when the pack body 20 is folded up in the form of a cuboid, the pouring spout 21 projects laterally beyond this. In the finished pack, (Figure 1), triangular edge gussets 35 are folded over against the side walls 26, 27. The remaining part of the pouring spout 55 21 is folded over against the top wall 22. Furthermore, a triangular residual piece 36 is folded against the front wall 23 or rear wall 24. In this position, the pouring spout 21 can be fastened releasably to the pack body 20.

60 A further feature of the two different pack designs is that, in that according to Figures 1 and 2, the pouring spout 21 is located approximately centrally, that is to say in a vertical centre plane of the pack body 20. On the other hand, in the alternative form according to Figures 3 and 4, the pouring spout 21 is

offset towards the outermost edge, for example located on the side of the rear wall 24. The latter is continued as a wall of the pouring spout 21, whilst the other merges into the top wall 22. As can be seen in Figure 3, the pouring spout 21 designed in this way rests exclusively against the top wall 22 before the pack is used.

The unfilled flat packs or pack blanks for the forms of construction are also designed differently. A common feature is that the packs or blanks are produced from a continuous web of material, namely a tube of material 37. Alternatively, this consists of a film tube (Figure 9) extruded in one piece, that is to say with a closed cross-section, or of several, especially two sheets of material 38 and 39 which are joined together into the tube of material 37 in various ways by gluing or welding. In the exemplary embodiment according to Figure 5, webs of material 38, 39 of the same width are connected to one another laterally by tube seams 40 and 41.

In the exemplary embodiment according to Figure 6, the web of material 39 is wider than the sheet of material 38 by an amount yet to be explained. Finally, in the exemplary embodiment according to Figure 7, there is a further special feature in that a reinforcement in the form of a reinforcing strip 42 is attached in a part region. This can consist of paper, cardboard or the like and can be attached on the inside or - as shown - on the outside by gluing or welding over its entire surface. The reinforcing strip 42 is located in a region which forms the bottom wall 25 of the pack.

The tube of material 37 designed in the above way is first provided continuously with lateral V-folds 43 and 44. These inwardly directed folds, which extend over the full length of the tube of material 37 and have a V-shaped cross-section, are fixed, on the one hand, by the tube seams 40, 41 and, on the other hand, by corresponding tube seams 45 and 46 respectively.

Within the tube of material 37 prepared in this way, packs or blanks for producing the packs are formed so as to lie next to one another in two rows 47 and 48 and are severed from the tube of material 37. Severing can be effected by stamping, but also by transversely directed thermal cutting.

The packs or blanks are marked in the tube of material 37 by the welding or gluing seams defining the pack, that is to say by the bottom seams 29 formed at the outer edge, by the side seams 30, 31 and by the spout seams 32 and 33. Furthermore, in the exemplary embodiment of Figure 9, corner seams 49 and 50 extending in the region of the bottom wall 25 to be made are formed. When the pack is filled and folded up in the form of a cuboid, these lead to the special construction, evident from Figures 2 and 4, of the lower part of the pack.

The arrangement of the packs or blanks in two rows 47 and 48 within the tube of material 37 is especially important. As is evident from Figure 8, the packs of one row 47 are offset respectively relative to the packs of the other row 48 by half a pack width. As a result, the triangular pouring spouts 21 can engage one another positively. Each pouring spout of one row projects into a suitable triangular recess which

is bounded by two pouring spouts of the packs of the other row. The packs can thereby be severed ready and in the closed, state, from the tube of material 37, free of waste, by means of transverse stamping.

- 5 The pack according to Figures 3 and 4 as somewhat greater requirements in the design of the tube of material 37 or the arrangement of the blanks within this.

Figure 10 shows a portion of a tube of material 37 in which two packs or pack blanks, with the (trapezoidal) pouring spouts 21 facing one another, are arranged in two rows. The folding lines 28 and the welding or gluing seams are indicated. The next step is to make the V-folds 43, 44 on the longitudinal sides of the tube of material 37, as described in relation to Figures 8 and 9. The resulting layout of the two pack blanks is shown in Figure 12. The cross-section corresponds to that according to Figure 9.

Before the blanks or packs are severed from the tube of material 37, a further measure is necessary here because of the off-centre lateral arrangement of the pouring spouts 21. In the region of the upper and lower sheets of material 38, 39, the tube of material 37 is provided, in each case, with an additional continuous fold, specifically with a Z-fold 51 and 52 respectively (Figure 14). The above-mentioned Z-folds 51, 52 are at a distance from and on different sides of an (imaginary) longitudinal centre plane of the tube of material 37. This now has the layout shown in Figure 13. The necessary welding or gluing seams can now be made to mark the individual packs. It is evident, here, that the trapezoidal pouring spout 21 is dimensioned in such a way that it fits in a likewise trapezoidal recess in two packs or blanks of the adjacent roll.

It is important for the construction and functioning capacity of the pack that the converging spout seams 32, 33 are continued here within the pack up to the side seams 30, 31 and thereby produce a pouring funnel located partially within the pack and extending over the full width.

The individual closed (flat) packs severed from the tube of material 37 can, for further processing, namely filling, be received in a magazine of a filling machine and then filled in succession. Filling can be carried out, for example, by injector needles.

CLAIMS

50 1. Pack made of flexible packaging material, especially weldable composite film, for receiving liquid or solid pourable materials, it being possible for a blank to be folded, by means of welding or gluing seams, into an approximately cuboid shape to form bottom and top walls as well as front, rear and side walls and a pouring spout being located on the top wall, wherein the pouring spout is made to taper towards the outflow end and corresponds, in the region of the transition into the top wall, at least to the width of the latter.

2. Pack according to claim 1, wherein the pouring spout is made approximately triangular or trapezoidal and is limited laterally by converging welding or gluing seams.

65 3. Pack according to claim 1 or 2, wherein the

pouring spout is located approximately in the middle transverse plane of the top wall.

4. Pack according to claim 1 or 2, wherein the pouring spout is located at a distance from the middle transverse plane of the top wall, especially at an edge of the top wall extending towards the front or rear wall.

5. Pack according to claim 4, and one or more of the further claims, wherein the pouring spout is arranged with one of its walls as a continuation of the front or rear wall.

6. Pack according to claim 2 and one or more of the further claims, wherein the converging spout seams limiting the pouring spout are continued up to the side wall (in a straight line).

7. Pack according to claim 1 and one or more of the further claims, wherein the pouring spout extends over the full width of the (flat, spread-out) pack, and in that, with the pack folded up (cuboid), lateral triangular gussets of the latter are folded over against its side walls.

8. Pack according to claim 1 and one or more of the further claims, wherein, before the pack is used, the pouring spout is folded over against the top wall and, if appropriate, against the front or rear wall and is fastened thereto.

9. Pack according to claim 1 and one or more of the further claims, wherein at least the bottom wall is provided with a reinforcement, preferably made of paper which is fastened, especially welded on, on the inside and/or on the outside.

10. Tubular web (tube of material) of packaging material for making packs or blanks according to one or more of claims 1 to 9, the sheet having lateral V-shaped inward folds (V-folds) to form the bottom wall of the packs facing one another with the pouring spouts, and the pouring spouts of the packs or blanks arranged in two rows within the tube of material facing one another and engaging positively in one another, wherein the packs or the blanks of one row are arranged offset relative to the packs or blanks of the other row, in such a way that the pouring spout of a pack or blank of one row fits into a recess bounded by the pouring spouts of two packs or blanks of the other row.

11. Tubular web (tube of material) according to claim 10, wherein, to produce packs or blanks with a pouring spout located laterally offcentre, material webs of the tube of material with Z-shaped folds are arranged at a distance from and on different sides of a longitudinal centre plane of the tube of material to form the top wall of the pack.

12. Tubular web (tube of material) according to claim 10 or 11, wherein a continuous reinforcing strip made especially of paper, cardboard or the like, is arranged as a reinforcement for the bottom wall in the lateral V-folds and is connected to the tube of material by welding or gluing.

125 13. Pack made of flexible packaging material substantially as hereinbefore described with reference to the accompanying drawings.

14. Tubular web (tube of material) of packaging material for making packs or blanks substantially as hereinbefore described with reference to the accompanying drawings.

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